

Patent Claims

1. Metal-containing, hydrogen-storing material that contains a catalyst for hydrating or dehydrating the same, characterised in that the catalyst comprises at least one organic compound.
2. Metal-containing material according to claim 1, characterised in that the organic compound is liquid.
3. Metal-containing material according one or both of claims 1 or 2, characterised in that the organic compound consists of a mix of organic compounds.
4. Metal-containing material according to one or both of claims 1 or 2, characterised in that the organic compound consists of organic composite compounds.
5. Metal-containing material according to one or several of claims 1 to 4, characterised in that the organic compound is a organometallic compound.
6. Metal-containing material according to claim 5, characterised in that the metal of the organometallic compound is Li, Be, B, Na, Mg, Al, Si, K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, Rb, Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Cs, Ba, La, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Fr, Ra, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No or Lw.

7. Metal-containing material according to one or several of claims 1 to 6, characterised in that this displays a nanocrystalline structure.
8. Metal-containing material according to one or several of claims 1 to 7, characterised in that the hydrogen-storing material displays a nanocrystalline structure.
9. Metal-containing material according to one or several of claims 1, 3 to 8, characterised in that the catalyst displays a nanocrystalline structure.
10. Metal-containing material according to one or several of claims 1 to 8, characterised in that the organic compound content is in the region between 0.005 mol% and 20 mol%, preferably in the region up to 50 mol%.
11. Metal-containing material according to claim 10, characterised in that the organic compound content is in the region of 2 mol%.
12. Metal-containing material according to one or several of claims 1 to 11, characterised in that the catalyst comprises additionally a metal carbonate.
13. Metal-containing material according to one or several of claims 1 to 12, characterised in that the catalyst comprises additionally a compound of a metal with an element of the VIth and/or VIIth main group of the periodic system of the elements.

14. Metal-containing material according to one or several of claims 1 to 13, characterised in that the catalyst additionally comprises a metal hydroxide.

15. Method for the manufacture of a metal-containing material according to one or several of claims 1 to 14, characterised in that the metal-containing material and/or the catalyst is or, as the case may be, are subject to a mechanical grinding process.

16. Method according to claim 15, characterised in that the grinding process is performed for a different length of time depending on the metal-containing catalyst.

17. Method according to one or both of claims 15 or 16, characterised in that the metal-containing material is first subjected to the grinding process and subsequently, after addition of the catalyst to this, the grinding process in regard to the metal-containing material and the catalyst is continued.

18. Method according to one or both of claims 15 or 16, characterised in that the catalyst is first subjected to the grinding process and subsequently, after addition of the metal-containing material to this, the grinding process in regard to the catalyst and the metal-containing material is continued.

19. Method according to one or both of claims 15 or 16, characterised in that the metal-containing material and the catalyst are each separately subjected to a grinding process and subsequently mixed.

20. Method according to one or both of claims 15 or 16, characterised in that the metal-containing material and the catalyst are ground together.
21. Method according to one or several of claims 15 to 20, characterised in that the duration of the grinding process is in the region of 0 to 200 hours, preferably in the region of 1 minute to 200 hours.
22. Method according to claim 21, characterised in that the duration of the grinding process is in the region of 20 to 100 hours.
23. Method according to one or several of claims 15 to 22, characterised in that the grinding process is performed in an inert gas atmosphere.
24. Method according to claim 23, characterised in that the inert gas is argon.
25. Method according to one or several of claims 15 to 23, characterised in that the grinding process takes place with the addition of an organic solvent.
26. Method according to one or several of claims 15 to 21, 25, characterised in that the grinding process is performed in an atmosphere containing CO and/or CO₂.